

What is claimed is:

- 1 1. A genetically engineered plant, or portion thereof, comprising a recombinant nucleic  
2 acid sequence that encodes a protein involved in Vitamin C biosynthesis.
- 1 2. The genetically engineered plant of claim 1 wherein said plant, or portion thereof, is a  
2 dicot.
- 1 3. The genetically engineered plant of claim 1 wherein said genetically engineered plant  
2 is *Arabidopsis thaliana*.
- 1 4. The genetically engineered plant, or portion thereof, of claim 1 wherein said nucleic  
2 acid comprises a polynucleotide that encodes GDP-mannose pyrophosphorylase.
- 1 5. The genetically engineered plant of claim 1 wherein said genetically engineered plant,  
2 or portion thereof, is capable of overexpressing said recombinant nucleic acid.
- 1 6. The genetically engineered plant of claim 1 wherein said genetically engineered plant,  
2 or portion thereof, is capable of producing increased levels of Vitamin C.
- 1 7. The genetically engineered plant of claim 1 wherein said genetically engineered plant,  
2 or portion thereof, has increased resistance to environmental stress compared to a  
3 plant of the same species without said recombinant nucleic acid wherein said  
4 environmental stress is selected from the group consisting of:  
5 a) drought;  
6 b) cold;  
7 c) UV radiation;  
8 d) air pollution;  
9 e) salts;  
10 f) heavy metals; and

11 g) reactive oxygen species.

1 8. The genetically engineered plant of claim 1 wherein said genetically engineered plant,  
2 or portion thereof, is edible.

1 9. A genetically engineered plant, or portion thereof, comprising a recombinant nucleic  
2 acid that encodes GDP-mannose pyrophosphorylase.

1 10. The genetically engineered plant of claim 9 wherein said genetically engineered plant,  
2 or portion thereof, is a dicot.

1 11. The genetically engineered plant of claim 9 wherein said genetically engineered plant  
2 is *Arabidopsis thaliana*.

1 12. The genetically engineered plant of claim 9 wherein said genetically engineered plant,  
2 or portion thereof, is capable of overexpressing said recombinant nucleic acid.

1 13. The genetically engineered plant of claim 9 wherein said genetically engineered plant,  
2 or portion thereof, is capable of producing increased levels of Vitamin C.

1 14. The genetically engineered plant of claim 9 wherein said genetically engineered plant,  
2 or portion thereof, has increased resistance to environmental stress compared to a  
3 plant of the same species without said recombinant nucleic acid wherein said  
4 environmental stress is selected from the group consisting of:

5 a) drought;

6 b) cold;

7 c) UV radiation;

8 d) air pollution;

9 e) salts;

10 f) heavy metals; and

11 g) reactive oxygen species.

1 15. The genetically engineered plant of claim 9 wherein said genetically engineered plant,  
2 or portion thereof, is edible.

1 16. A method of increasing the endogenous level of Vitamin C produced in a plant, or  
2 portion thereof, comprising overexpression of an enzyme crucial to Vitamin C  
3 biosynthesis.

1 17. The method of claim 16 wherein said enzyme is GDP-mannose pyrophosphorylase.

1 18. The method of claim 16 wherein said plant, or portion thereof, is a dicot.

1 19. The method of claim 16 wherein said plant is *Arabidopsis thaliana*.

1 20. The method of claim 16 wherein said plant, or portion thereof, comprises increased  
2 antioxidation capacity.

1 21. The method of claim 16 wherein said plant, or portion thereof, has increased resistance  
2 to environmental stress compared to a plant of the same species without said  
3 recombinant nucleic acid wherein said environmental stress is selected from the  
4 group consisting of:

5 a) drought;

6 b) cold;

7 c) UV radiation;

8 d) air pollution

9 e) salts;

10 f) heavy metals; and

11 g) reactive oxygen species.

1 22. The method of claim 16 wherein said method produces a plant, or portion thereof,  
2 which is edible.

- 1 23. A genetically engineered plant comprising a mutant gene that encodes a form of GDP-  
2 mannose pyrophosphorylase.